Good morning, Chairman Collins, Ranking Member Casey, and distinguished members of the Committee. I am Richard Hodes, M.D., Director of the National Institute on Aging (NIA), which is one of the 27 Institutes and Centers of the National Institutes of Health (NIH). It is an honor to be here today to update you on our progress addressing a public health issue of considerable urgency: the need for compassionate care and effective treatment for men and women with Alzheimer's disease or a related form of dementia (AD/ADRD). I look forward to telling you about some of the many ongoing initiatives ancompui(N(a(2aseyfoectic-4(e)0(f)-1(f)(ha)4(r)3(d H)2(

later development of dementia, such as hypertension and diabetes, also remain common.[4] For these reasons, unless we identify a way to prevent or effectively treat dementia, the number of affected Americans will rise dramatica0.004d4 Tw [(d)-4(r)-1(on.)]Ticli-1.73 aoeme-184(h 24(oe)--1.7 ue)-4(r)5(

NIA to be of similarly

One intriguing finding using brain banks and cohort studies participating in the AMP-AD consortium provides new evidence that viral species, particularly herpesviruses, may have a role in AD biology. Although these findings do not prove that the viruses cause the onset or progression of Alzheimer's, they do demonstrate how viral DNA sequences and activation of biological networks—the interrelated systems of DNA, RNA, proteins and metabolites—may interact with molecular, genetic and clinical aspects of Alzheimer's. NIA is planning a new initiative, to which the National Advisory Council on Aging has given concept approval, to encourage studies to answer whether microbial pathogens in AD represent a causal component of the disease and to invite research across a broad range of topics on mechanisms underpinning neurodegeneration in AD associated with microbial pathogens in the central nervous system.

New Biomarkers for Detection, Diagnosis, and Treatment Monitoring

Another area in which NIA has made tremendous progress is the identification and use of clinical, imaging, genetic, and biochemical biomarkers for early detection and tracking of AD/ADRD and for use tracking treatment efficacy in clinical trials. 2019 will mark the fifteenth anniversary of the establishment of the Alzheimer's Disease Neuroimaging Initiative (ADNI), a landmark public-private partnership. ADNI investigators have made major contributions to AD research, particularly in the areas of early detection and progression monitoring. For example, ten years ago, Alzheimer's disease could only be definitively diagnosed after the patient had died, because the only fully reliable diagnostic tool we had was examination of post-mortem brain tissue for the disease's characteristic amyloid plaques and tau tangles. Today, however, due in large measure to the work of ADNI scientists, we can diagnose Alzheimer's in living subjects using sophisticated neuroimaging techniques or by detecting tau and amyloid in the cerebrospinal fluid. These breakthroughs have had and will continue to have important implications on researchers' ability to counsel patients with symptoms of dementia, help them manage their symptoms, and recommend appropriate clinical trials. A critical aspect of this initiative is its innovative data-access policy, which provides all data without embargo to all scientists in the world. More than 53 million data downloads from ADNI sey t1(a)4n194k3(y70.88 281bJ ET

reporting and reproducibility and translatability of animal model efficacy testing studies. The database hosts curated summaries of published studies (over 600 published studies curated to date) and provides easy access to information on: study design methods and outcomes, animal models, therapeutic agents, therapeutic targets, patents and related clinical trials. It also provides a platform for creating citable reports/preprints of unpublished studies, including studies with negative findings. In addition to being a valuable resource for academic and industry researchers and data scientists, AlzPED also provides NIH and other funding organizations with a tool for enforcement of requirements for transparent reporting and rigorous study design.

New challenges arise when a compound is ready to move from animal into human testing. Basic researchers may lack the resources or know-how to move promising compounds into clinical trials; biopharmaceutical companies may be reluctant to invest in neurotherapeutics development because there are few clinically validated targets or strategies, there is a long track record of failure, and many nervous system disorders affect relatively small populations.

To help meet these challenges, NIA participates in the NIH Blueprint Neurotherapeutics Network (BPN), which provides support for small molecule drug discovery and development. Through this and other initiatives, NIA supports a robust preclinical-early clinical drug development program for AD/ADRD. Over 30 novel AD/ADRD drug candidates are currently in different stages of late preclinical and early clinical development for over a dozen different targets (non- -tau). From 2012- 2016 NIA and BPN supported the biotech firm Tetra Discovery Partners for a program aimed at developing BPN14770, which is designed to treat behavior and cognition in Fragile X Syndrome, and memory loss in early-to-moderate AD patients. The compound has successfully completed Phase 1 testing, is now in Phase 2 clinical testing for Fragile X Syndrome and is poised enter Phase 2 testing for early AD in 2019.

At present, over 40 compounds are currently under study for the prevention and treatment of AD, mild cognitive impairment, and age-related cognitive decline. NIH also supports

"Until There Is a Cure, There Is Care"

I would also like to report on progress toward the equally compelling goal of expanding research on care and caregiving interventions in the area of Alzheimer's and related dementias. This field of research has grown tremendously over the past several years, and some programs have already begun to be disseminated into more widespread use. For example, the REACH II (Resources for Enhancing Alzheimer's Caregiver Health) caregiver intervention, originally supported by the NIA, has been demonstrated to be effective in an ethnically diverse population and is currently being translated more broadly through the Department of Veterans Affairs. Centers in fifteen states are participating in this effort, and modifications are underway to extend the intervention to caregivers of veterans with traumatic brain and spinal cord injury. The Indian Health Service (IHS) is also pilot testing the program with several Tribal Nations sites through the IHS and Administration for Community Living.

Other care-related interventions exist for which additional data and evaluation are needed. To provide a comprehensive assessment of evidence for effectiveness of interventions studied to date, including REACH II, the NIA has entered into an interagency agreement with the Agency for Healthcare Research and Quality to support an Evidence-based Practice Center (EPC) in conducting a systematic review of the relevant science and issuing findings on these topics. The NIA has also contracted with the National Academies of Sciences, Engineering, and Medicine to establish a committee of experts that will assess the EPC's evidence review in the context of a range of other data, identify research gaps, and issue recommendations that will inform future research and practice.

Although some progress has been made in these areas, the critical need for further research around care and services for persons with dementia and their caregivers led NIA, along with the DHHS Office of Women's Health and Office of the Assistant Secretary for Planning and Evaluation and several private organizations, to convene the first National Research Summit on Dementia Care in October 2017. The goal of this seminal meeting was to identify research directions for accelerating improvements in comprehensive care, services, and supports for persons with dementia, families, and other caregivers. The Summit yielded 58 final recommendations across multiple areas of research. NIA has used those recommendations to set

also help us to better understand what services are being utilized in the community, as well as

to think creatively about how their area of study could interface successfully with research on AD/ADRD. A few of these research topics included:

- A study to evaluate the effects of alcohol drinking on AD-linked neural and behavioral pathologies in a mouse model (National Institute on Alcohol Abuse and Alcoholism)
- A gene-environment study of the association between early-life exposure to air pollutants and later-life development of AD- A gene 0 Td [(r)5(e) m

x